

Town of



AMHERST

Massachusetts

OFFICE OF THE SUPERINTENDENT OF PUBLIC WORKS
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DEPARTMENT OF PUBLIC WORKS

Fiscal Year 2002

This has been a year of change for the Department. Noel Ryan, the Superintendent for the past 12 years, retired in February of 2002. He has left behind a staff of well-trained and eager employees who are ready to take on the challenge of a new Superintendent. Yuehlin Lee, the Recycling Coordinator, left the Town in September of 2001. Dan Dulaski, the Town Engineer for the past 3 years, departed for a position with the University of Massachusetts in March of 2002. Lastly, in June of 2002, William (Bill) Kosloski, the Water Distribution Supervisor and a Town employee for 34 years, was killed in a vehicle accident. These losses, and a larger-than-average summer construction schedule, set the stage for a busy year.

The only work area that has been slower than average during this year has been snow removal. Last year's winter was a far cry from the one before. There were only 17 storms, with a total of 28 inches of snow. The winter turned out to be a string of small storms that required a great deal of sanding, with only a few large storms that required plowing. The staff seemed to enjoy the break from the winter of 2001-2002.

The position of Town Engineer has been filled by promoting Jason Skeels, who has served as the Junior Engineer for the Department for the last year and a half. Since Jason's appointment came late in the year, the Town's Engineer section of this report has been omitted this year.

Robert Pariseau, Director of Water Resources, details the operation of both the water and sewer distribution, and treatment facilities in his section of the report. Mr. Pariseau and his staff continue to make improvements to both systems. The long-awaited Middle Street sewer project began at the end of this year. This project will bring sanitary sewers to a large portion of South Amherst, with all costs being borne by the Sewer Fund, and without a rate increase. This year has continued to be dry; the state department of Environmental Protection issued drought warnings several times. If drought conditions persist, the Town could experience water supply problems next year.

Carolyn Holstein, the new Solid Waste/Recycling Coordinator, provides information in her section of the report on the state of solid waste and recycling in Amherst. This will be the last full year of operation for the Town landfill. Plans have already been submitted to begin operations as a transfer station. The Town had to deal with an apparent violation in the operating permit for the landfill issued by the state department of Environmental Protection. This matter should be resolved by the fall of 2002.

I would like to take this opportunity to thank everyone who has made my transition from the City of Northampton to the Town of Amherst so smooth. I have enjoyed meeting so many citizens who are interested in the Department and its responsibilities. I have also enjoyed the willingness of the Town employees to explore new ideas. As my first full year begins, my goal is to continue to operate and improve the Town's infrastructure to meet the needs of the Town.

Guilford B. Mooring II, P.E.
Superintendent of Public Works

CONSTRUCTION AND MAINTENANCE

The personnel of the Highway Division completed the following projects during FY 02:

HIGHWAY RECONSTRUCTION:

North Pleasant Street: from Eastman Lane to Berkshire Lane, elevated 3500 feet of granite curbing.

STORM DRAINAGE PROJECTS

NAME	PIPE SIZE	LENGTH	REMARKS
South East Street	12" ADS	300'	Replaced existing storm pipe
East Leverett Road	12-15" ADS	150'	Replaced 5 existing culverts
Elm Street	15" ADS	486'	Replaced existing storm pipe
Total		936'	

TRANSPORTATION IMPROVEMENT PROGRAM (TIP)

The following TIP projects were bid this year and construction was to have started. Due to delays at Mass Highway these projects will start in July of 2002. They will be completed in the spring of 2003.

The projects are as follows:

1. reconstruction of the intersection of Main/Amity/North Pleasant Streets
2. reconstruction of the intersection of College Street and South Pleasant Street (Route 9/Route 116)
3. traffic lights installation at the intersection of Belchertown Road/Gatehouse Road/Old Farm Road.

ADDITIONAL PROJECTS

The following additional projects were started and completed in FY 02:

1. excavated foundation for DPW addition, 360 sq. ft.
2. completed preparation work for new play areas at Mill River playground
3. assisted Water Division in the installation of a large water meter vault
4. provided assistance to the Wildwood playground committee.

SANITARY SEWER DIVISION

SEWER MAINTENANCE

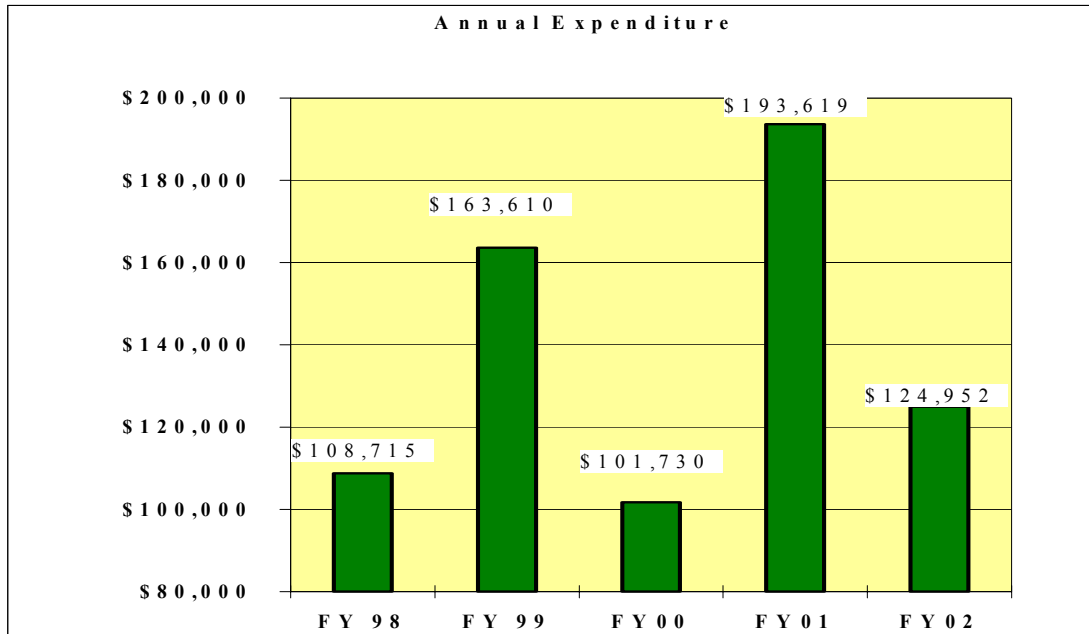
The Department investigated 65 sanitary sewer complaints and corrected 12 stoppages in the collection system. Approximately 20 miles of sewer mains were cleaned and flushed. Problematic sewer locations are flushed and cleaned on a quarterly basis.

The new sewer T.V. camera is working well and is permitting the Department to survey the sanitary sewer system. This equipment permits us to investigate chronic sewer line problems and avoid unnecessary excavation on the sewer system. Problem areas can be pinpointed within one foot, and the exact nature of the problem can be determined, e.g. broken line, grease problem, root problem, or foreign object obstructing flow. A total of 17,000 feet of our sanitary sewer system was televised this year. Already the system has allowed the Department to address issues before new paving was put in place, saving money and time in rework costs.

SEWER REPAIR

NAME	PIPE SIZE	LENGTH	TYPE	REMARKS
Lower Main	12"	20'	SDR	Collapsed Sewer
Elm Street	8"	257'	SDR	Line Replaced

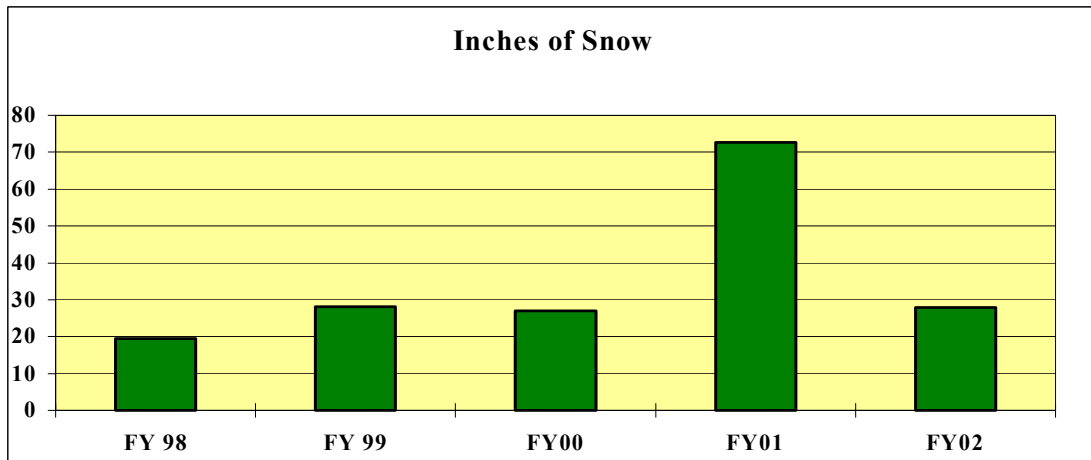
SNOW AND ICE REMOVAL



There were 17 snow and ice storms, with a total of 28" of snow.

2083 tons of sand and 1115.99 tons of salt were used.

11997 gallons of Ice Band Magic were used on the roadways and sidewalks.



Year	Cost	Snow (inches)	No. of Storms
FY 98	\$108,715	19.5	29
FY 99	\$163,610	28.1	9
FY 00	\$101,730	26.9	10
FY 01	\$193,619	72.7	21*
FY 02	\$124,952	28.0	17**

10 Additional snow/ice events of less than 1" occurred, which required sanding operations only.

**3 storms with no accumulation

WATER TREATMENT & DISTRIBUTION

Water Consumption: The average daily water consumption for FY 02 was 3.66 million gallons; the peak day, September 5, 2001, was 4.89 million gallons.

The figures below summarize the amount of water pumped, the revenue generated and the chemicals used to treat the water. Chlorine and ammonia are used for disinfection. Potassium permanganate is used for iron and manganese removal at Well #4. Polymer is used for water treatment at the Atkins and Centennial water treatment plants. Fluoride is added at a level of 1 part per million to reduce tooth decay, and sodium hydroxide is used to elevate the pH of the water for corrosion control.

Water Services

	FY 00	FY 01	FY 02
New services installed	27	63	52
Total water services	6,130	6,193	6,243
# Meters replaced	301	165	164

Chemical Usage - All Sites

Chlorine (lbs.)	18,952	16,380	14,618
Sodium Hydroxide (gals)	18,106	18,140	16,509
Polymer (gals)	2,657	2,936	2,830
Potassium Permanganate (lbs.)	1,110	345	589
Ammonia (lbs.)	3,685	3,345	2,996
Sodium Fluoride (lbs.)	22,950	23,020	23,525

Monthly Pumping in Million Gallons

Month	FY 00	FY 01	FY 02
July	124.675	107.646	114.714
August	108.639	103.606	130.526
September	126.708	123.370	127.739
October	122.286	125.097	123.709
November	111.012	111.235	107.669
December	108.797	106.642	103.200
January	102.363	91.840	89.980
February	113.943	103.730	104.158
March	109.708	106.136	106.148
April	111.901	113.164	113.910
May	115.23	133.884	116.228
June	99.332	104.033	99.891
Total	1,354.60	1330.38	1337.87
Daily Average	3.71	3.65	3.66
Maximum Daily	4.99 (7/30/99)	4.98 (5/13/01)	4.89 (9/05/01)
Minimum Daily	2.63 (12/26/99)	2.45 (12/26/00)	2.32 (12/26/01)

Water Pumped - Million Gallons

Source	FY 00	FY 01	FY 02
Wells #1 & #2	174	165	223
Well #3	364	366	382
Well #4	109	42	73
Well #5	22	16	46
Pelham Reservoirs	332	327	295
Atkins Reservoir	354	414	319
Total Water Pumped	1,355	1,330	1,338
Average Daily (millions)	3.71	3.65	3.66

Water Consumed – Cubic Feet

	FY 00	FY 01	FY 02
UMass	66,759,900	61,900,600	60,074,000
Amherst College	5,310,800	5,167,900	5,171,000
Hampshire College	2,461,100	2,654,700	2,372,600
Town	89,153,260	78,112,300	79,602,400
Municipal	1,166,000	1,165,700	1,335,800
Special Water Readings	537,698	425,300	324,900
Other	302,300	289,300	339,700
Unmetered Use	--	4,087,567	4,451,870
Adjustments	(362,000)	(1,560,100)	(94,000)
Total Metered (ft³)	166,053,058	155,363,467	153,766,270
Total Metered (million gals.)	1,242	1,162	1,115
% Unaccounted	8.32%	12.61%	16.6%

Total Revenue – Dollars

	FY 00	FY 01	FY 02
UMass Water	\$1,135,559	\$1,164,272	\$1,109,294
Sewer	\$1,043,115	\$1,009,666	\$1,020,517
Amherst College Water	\$90,558	\$96,422	\$96,995
Sewer	\$83,202	\$84,823	\$92,143
Hampshire College Water	\$42,369	\$53,295	\$44,885
Sewer	\$38,757	\$43,821	\$42,794
Town Water	\$1,401,303	\$1,396,849	\$1,418,333
Sewer	\$1,199,761	\$1,151,365	\$1,245,538
Municipal Water	\$21,544	\$25,726	\$27,053
Sewer	\$18,382	\$18,957	\$24,065
Special Reading Water & Sewer	\$19,603	\$19,953	\$13,814
Adjustments Water & Sewer	(\$17,288)	(\$57,876)	(\$13,737)
Other Water & Sewer	\$9,724	\$10,099	\$12,430
Total Revenue	\$5,086,590	\$5,017,373	\$5,134,124

WATER QUALITY DATA:

Bacterial Samples: Bimonthly samples were analyzed from 27 sites around town. All samples were negative for coliform bacteria.

Fluoride: Fluoride was added to all sources at a level of 1.0 ppm to prevent tooth decay.

Treatment Plant Performance: Both the Atkins (Shutesbury) and Centennial (Pelham) Water Treatment Plants produced water that meet the requirements set by the Environmental Protection Agency (EPA). The average turbidity from Atkins was 0.11 N.T.U. and from Centennial 0.09 N.T.U. The EPA requires that these readings be less than 0.3 N.T.U. in 95% of the samples. Total Trihalomethanes, a byproduct of disinfection, averaged 32.6 ppb from quarterly sampling at eight (8) different sites around town. The EPA limit is 80 ppb.

Water Rate: The water rates for FY 02 are listed below.

0 – 10,000 Cu. Ft.	\$1.70
10,001 – 100,000 Cu. Ft	\$1.80
100,001 Cu. Ft.	\$1.90

Cross Connection Program: The cross connection program was established in 1989 under Massachusetts Drinking Water Regulation 310 CMR 22.22 to prevent cross contamination of the water supply with hazardous substances. Water Department staff tests these devices twice annually.

Total Backflow Devices			
	FY 00	FY 01	FY 02
Town	47	47	49
UMass	346	350	353
Amherst College	59	60	55
Hampshire College	22	24	24
Commercial	68	66	74
Total	542	547	555

Chemical Analysis: The following analyses were run on all water sources:

- inorganic compounds
- nitrate & nitrite
- volatile organic compounds
- total Trihalomethanes – quarterly distribution system samples
- Haloacetic acids – quarterly distribution system samples.

All levels of substances in the water were below the Maximum Contaminant Level set by the Safe Drinking Water Act.

OTHER ACTIVITIES

Drought: The amount of rainfall measured at the official weather station at the Wastewater Treatment Plant was 34.63". This amount is well below the annual average of 42". Atkins Reservoir was taken out of service during December and January to refill.

Water Main Flushing: The annual water main flushing program was not done this April because of drought conditions. Only specific problem areas were flushed.

Water Meter Testing: All major water meters and flow meters were tested and calibrated.

Tilson Farm Meter: A new water meter, vault and associated piping were installed to replace the outdated facility.

Consumer Confidence Report: This annual report on water quality is available on the Town's Web site, or by calling the Public Works office at 256-4050, ext. 10.

Timber Stand Inventory: With the assistance of a state grant, an inventory was taken of all trees located on Town-owned lands in the watershed.

East Pleasant Street Water Main: Goncalves and Sons of Ludlow, Massachusetts was contracted to install 1,600 feet of 16" water main from the existing water tank northerly of the entrance to Village Park. This water main will improve flow equalization between the Village Park and East Pleasant Street water tanks.

Watershed Property Purchase: Thirty-seven acres of land owned by William vanPelt at 302 Amherst Road was approved for purchase at the Spring Town Meeting. A tributary of the Amethyst Brook flows directly through this land en route to the Hills Reservoir.

Well #3 Rehabilitation: Tighe & Bond Engineers of Westfield, Massachusetts was contracted by the Town to engineer a complete rehabilitation of Well #3. The engineering was carried out to replace the roof, pumps, motors, and controls, and to install emergency power generation. This project will be completed in FY 03.

Bay Road Water Tank: Tighe & Bond Engineers of Westfield, Massachusetts was contracted by the Town to prepare specifications to sandblast and repaint the exterior of the Bay Road water storage tank. Rockwood Corporation of Lyons Falls, New York was the low bidder at \$139,760. The work will be completed in the summer of 2002.

Water Conservation Education: Once again, the Hitchcock Center of Amherst provided water conservation training for all Town students in grades two, four and five.

Atkins Reservoir: Surface Water Protection Plan: A grant awarded by the Massachusetts Department of Environmental Protection has allowed our water consultant Tighe & Bond to develop a Surface Water Protection Plan. This plan includes an emergency response plan and meetings with appropriate municipal officials to educate them on the function and importance of the plan.

Robert E. Pariseau
Director of Water Resources

WASTEWATER TREATMENT PLANT

Flow Data

The Wastewater Treatment Plant treated 1.6 billion gallons of wastewater in FY 02. This year, a considerable decrease in plant flow was recorded. This could be attributed to a combination of low rainfall and the success of the sealing and repair program being carried out by DPW and treatment plant staff.

	FY 00	FY 01	FY 02
Inches of Rainfall	54.91	48.32	34.46
Average Daily Flow in Million Gallons	4.49	4.44	3.67
Highest Day in Million Gallons	18.5 (9/10/99)	10.28 (3/22/01)	10.1 (9/21/01)
Chemicals Used			
Chlorine (lbs.)	13,125	14,034	13,656
Polymer (lbs.)	3,109	3,421	3,092
Potassium Permanganate (lbs.)	4,290	3,360	5,335

Chlorine is used to disinfect the wastewater prior to discharge into the Connecticut River. Polymer is used to thicken sludge as part of the disposal process. Potassium permanganate is used for odor control.

Treatment Efficiency

The water that is discharged into the Connecticut River is tested in our treatment plant laboratory. We perform many process control tests to optimize our treatment and produce the best quality effluent possible. The Environmental Protection Agency (EPA) and Massachusetts Department of Environmental Protection (DEP) monitor our activities and measure our effectiveness by the parameters listed below.

	EPA Limit	FY 00	FY 01	FY 02
Biological Oxygen Demand (mg/L)	30	11.1	10.95	14.7
Suspended Solids (mg/L)	30	4.3	4.2	4.3

Septage Received

The treatment plant receives septage from residential septic tanks pumped from the towns of Amherst, Pelham, and Shutesbury. Below is a summary of the number of truckloads received.

	FY 00	FY 01	FY 02
Amherst	202	184	185
Pelham	59	59	61
Shutesbury	61	69	86
Total	322	312	332

Sludge Data

Sludge is the residual organic material left after the wastewater is treated. We currently thicken these solids on-site, and Casella Waste Management is under contract to deliver the liquid sludge to an

EPA-approved sludge incinerator. Sludge in FY 02 went to three incineration facilities: Fitchburg, Millbury and Cromwell, Connecticut. In FY 01 and FY 02, the volume of sludge transported decreased. This reduction was achieved by utilizing a new pressurized tank truck that could off-load a thicker sludge.

	FY 00	FY 01	FY 02
Total Gallons (transported)	4,180,220	3,727,700	3,515,265
Total Dry Tons	1,014	1,050	1,040
% Solids	5.9%	7.3%	7.1%

FY 2002 Sludge Disposal

Month	Total Gallons	Ave. % Solids	Total Dry Tons	Dry Tons Per Day	
July	215000	6.9%	61.7	2.0	
August	184000	7.2%	55.4	1.8	
September	297000	6.9%	85.3	2.8	
October	360970	7.2%	109.0	3.5	
November	300500	7.3%	91.5	3.1	
December	320000	6.9%	91.7	3.0	
January	259000	7.0%	75.2	2.4	
February	340000	7.1%	100.0	3.6	
March	306795	7.7%	86.4	2.8	
April	355500	7.4%	109.0	3.6	
May	376000	7.3%	115.0	3.7	
June	200500	7.5%	62.7	2.1	
Total	3515265	86.4%	1040	34.4	
Average	292940	%	86.9	2.9	

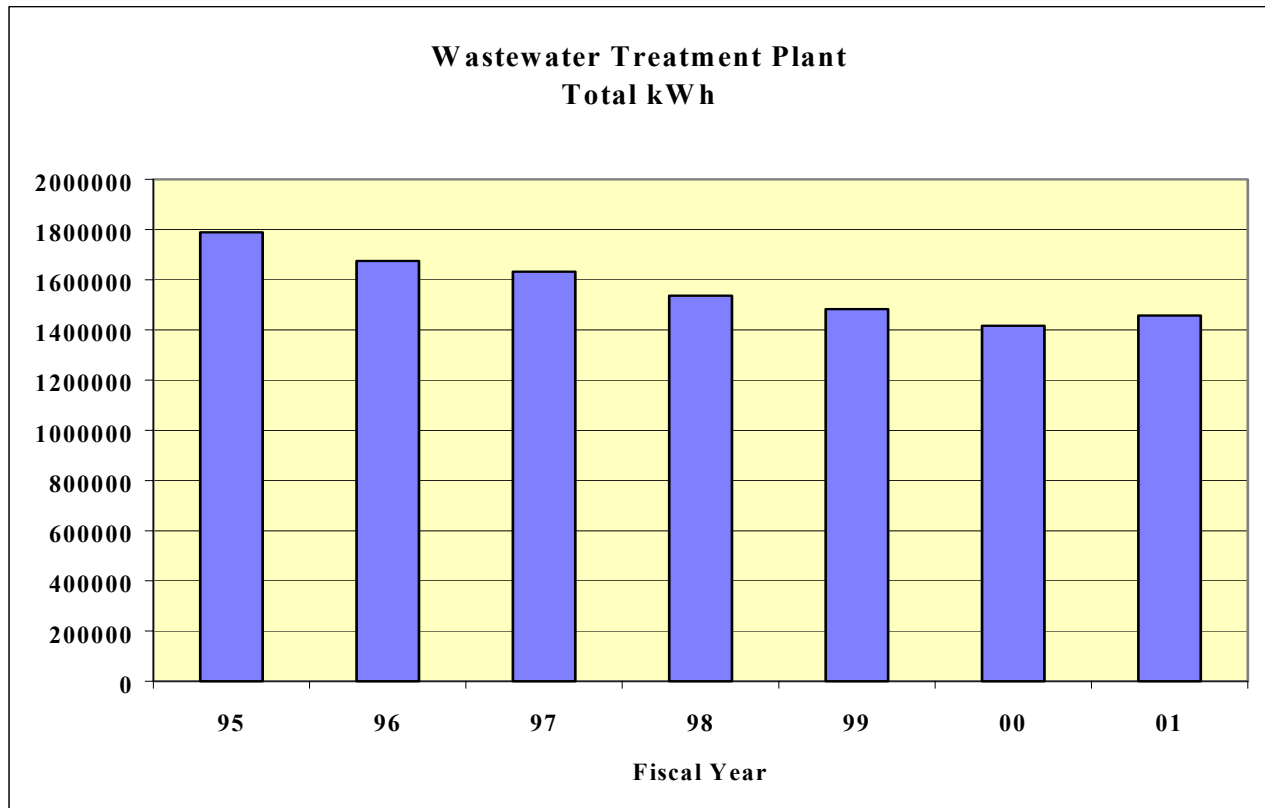
Power Consumption

	FY 00	FY 01	FY 02
Avg. KWH/month	118,104	121,450	102,825
Avg. KW Demand	220	218	221

Waste Water Treatment Plant FY 2002

Month	Days	KWH On Peak	KWH Off Peak	Total KWH	Demand KW	Bill
July	41	1489	1439	2928	184.0	\$ 11,855.08
August	17	1453	1211	2664	177.8	\$ 4,512.10
September	33	1268	1247	2515	196	\$ 8,349.75
October	30	1852	1646	3498	224.7	\$ 10,355.87
November	28	1985	1936	3921	235.9	\$ 10,827.17
December	34	1796	1897	3693	225.4	\$ 9,882.35
January	30	1578	1509	3087	208.6	\$ 7,775.00
February	26	1504	1504	3008	214.7	\$ 7,381.27
March	33	1933	1975	3908	229.1	\$ 11,090.58

April	28	2009	1887	3896	242.8	\$ 9,819.05
May	34	2058	2058	4116	240.8	\$ 11,967.73
June	28	2034	1862	3896	275.8	\$ 10,097.20
Total	362	20959	20171	41130	2655.6	\$113,913.15
Average	30.2	1746.6	1680.9	3427.5	221.3	\$ 9,492.76



Other Activities

Heating Control System: At the main treatment plant, a new control system was installed to set the plant air temperature to a lower level during unoccupied hours. New thermostats were installed in all zones.

Oil Storage Tanks: Two new above-ground oil storage tanks were installed at the treatment plant. A 3000 - gallon tank for heating and a 2000-gallon tank for the emergency generator replaced the old tanks that were installed in 1978. A state grant paid for the replacements.

Primary Sludge Pump: A second primary sludge pump and associated piping was demolished and replaced by plant staff, at considerable cost saving to the Town.

Collection System Repairs: All sewers on streets scheduled for repaving were video-inspected. Many manhole leaks and pipe defects were sealed or repaired by treatment plant staff.

Middle Street Sewer Project: Bid documents were prepared by our consultant Camp Dresser and McKee of Boston, Massachusetts. A contract was signed with Caracas Construction Corporation of Ludlow, Massachusetts for \$1,407,577 to complete the work. Sewers will be installed on Middle Street, Potwine Lane (from Plum

Brook east), Orchard Drive, Barry Circle, Blossom Lane, Sherry Circle and Bay Road (from Middle Street to Chapel Road). Two (2) new pumping stations were added, at Middle Street and Potwine Lane.

Stanley Street Repairs: A new 100 h.p. pump was installed by treatment plant staff. It replaced an original pump installed in 1976.

Robert E. Pariseau
Director of Water Resources

SOLID WASTE/RECYCLING

The fiscal year began with the denial by the Zoning Board of Appeals of the Town's request to permit a height extension of ten feet on the last active cell of the Amherst landfill. Not only is the landfill one of the most environmentally safe options to dispose of waste, the extra room for refuse would have provided revenue for a number of years for the Solid Waste Enterprise Fund, and more adequate time for the change from a landfill to a transfer station. The request failed by one vote, and the DPW began preparation for a future closing. Landfill hours were reduced to three days per week for a total of 18 hours instead of the previous 51 hours per week. Amount of refuse collected dropped to less than half that of the previous year – a total of 16,183 tons landfilled in FY 01 versus 7,625 tons in FY 02.

The recycling programs at the landfill, however, had a booming year. Participation in many of the fifteen programs at the Recycling Center which divert materials from the landfill increased significantly. Some of the programs, and approximate tons/count diverted in both FY 01 and FY 02 are listed below. Other programs – the “Take-it-or-Leave-It” area, the bookshed, Goodwill box, mercury-bearing waste, etc. – are more difficult to quantify, but are equally active.

<u>Material</u>	<u>tons – FY 01</u>	<u>tons – FY 02</u>
Chipped Brush/Leaves	516	536
Electronics	10.4	12.4
Hazardous Waste	10.6	13.2
Paint	3.6	6.2
Scrap Metal	209	292
Tires	4.4	5
Appliances (count)	452	600
Propane Tanks (count)	59	98

The landfill/recycling center has become so active, especially on Saturdays, when 500-600 residents use the facilities, that a group of volunteers have been organized to help the staff at the “Take-it-or-Leave-It” and book shed areas. Two to four volunteers help each Saturday. The landfill staff is extremely grateful for the extra service from these committed recyclers.

Multifamily recycling continues to improve but remains one of the more difficult hurdles for Amherst's recycling goals. State grants supplied Amherst with 65-or 95-gallon recycling bins, which this office distributed to every apartment complex that expressed interest. As a result, 95% of the apartment complexes in Amherst now have the equipment to recycle. The rate of recycling, however, still remains far below that of single-family housing.

The “Pay-As-You-Throw” (PAYT) program, a disposal option for residents who generate only a small quantity of refuse per week, began its second year with 185 households using the program, and ended with around 300 households. Participants in the PAYT program pay for disposal based on the amount of non-recyclable trash they generate; recycling at the drop-off center is included at no additional charge. Curbside refuse hauling fees have risen substantially since the planned closing of the landfill was announced, and the PAYT program is proving to

be a popular alternative.

Amherst participated in the Municipal Recycling Incentive Program (MRIP) for a fifth year, receiving over \$38,000 of incentive payments for establishing programs that increase recycling in Amherst. We also received recycling equipment, valued at over \$10,000, from the state. Amherst single-family homes generally lead the region in terms of amounts recycled. In FY 02, however, due to a change in local and state-wide weighing techniques, recorded tonnages for recycled paper, cardboard, bottles, cans, and cartons decreased, even though actual recycling increased in the apartment complexes and some businesses. New MRIP criteria in FY 02 focused on establishing ongoing collection programs for electronics and mercury products, while also increasing our commitment to "Buy Recycled" within Town departments and at the schools. The Town met the \$1/capita minimum of recycled products purchased during the year, but the schools have yet to adopt the "Buy Recycled" policy. Funding sources such as MRIP have become increasingly scarce given the state's economic downturn, just as landfill revenues are declining at the same time.

Yuehlin Lee, who had served as the Solid Waste/Recycling Coordinator since March 1999, resigned in August 2001. The new coordinator, Carolyn Holstein, began working for Amherst in November and will continue building upon the work of her predecessors to expand recycling access and waste diversion.

Carolyn Holstein
Solid Waste/Recycling Coordinator

TREE AND CEMETERY DIVISION

The Tree Division removed a total of 64 street trees during the past year. Trees removed were: 2 white ash, 1 fir, 5 American elm, 24 sugar maple, 4 black cherry, 1 white pine, 13 red maple, 3 hemlock, 2 red pine, 1 catalpa, 1 poplar, 4 Norway maple, 2 elm and 1 willow.

During FY 02, 4 trees were planted.

Thirty-three tree stumps were removed in FY 02.

In addition to tree care responsibilities, this department, consisting of three full-time employees and one part-time summer employee, is also responsible for the care and maintenance, including burials, at the West, North and South Cemeteries.

Burials in FY 2002

West Cemetery	1
North Cemetery	8
South Cemetery	11

PARKS DIVISION

The Parks Division of three full-time employees and two part-time summer staff continue the day-to-day maintenance of our parks and commons, together with the maintenance of twenty-three softball, baseball, football, lacrosse and soccer fields and many multi-purpose areas.

As was mentioned in previous reports, continued heavy use of all our fields and facilities requires increased maintenance, due to continued wear and tear, and major renovations will undoubtedly be required at some of our facilities in the very near future.